SUPRA SERVER PDM

UNIX Tutorial

T25-2262-43

SUPRA® Server PDM UNIX Tutorial

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Release information for this manual

The *SUPRA Server PDM UNIX Tutorial*, T25-2262-43, is dated January 15, 2002. This document supports Release 1.3 of SUPRA Server PDM in UNIX environments.

We welcome your comments

We encourage critiques concerning the technical content and organization of this manual. Please take the survey provided with the online documentation at your convenience.

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About this book

Using this document

The *SUPRA Server PDM UNIX Tutorial* complements and supports the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260, and the *SUPRA Server PDM System Administration Guide (UNIX)*, P25-0132. The tutorial is a prerequisite for users who are not experienced in creating database descriptions, data sets, data items, task logs, or systems logs. The tutorial also helps users who want to refresh their memory. A user implementing the concepts discussed in the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260, and the *SUPRA Server PDM System Administration Guide (UNIX)*, P25-0132, can use this tutorial as a reference text.

The *SUPRA Server PDM UNIX Tutorial* provides the user with step-by-step instructions for using SUPRA DBA functions to design a database description. These functions are:

♦ Defining a database description

♦ Defining task and system logs

♦ Validating and compiling the completed database description

The information is directed toward novice users who want to learn how to create a database and understand the operation of SUPRA.

Document organization

The information in this manual is organized as follows:

Chapter 1—Introduction
Introduces the tutorial, identifies prerequisites, and gives a brief overview.

Chapter 2—Creating a database description
Introduces the series of screens used in creating a database description.

Chapter 3—Validating and compiling a database
Describes the required steps to successfully validate and compile your database, which must occur before you can use it.

Chapter 4—Formatting database files
Describes functions to allocate disk space for data sets, task log, and system logs.

Glossary of terms

Index

Conventions

The following table describes the conventions used in this document series:

Convention	Description	Example

Constant width type	Represents screen images and segments of code.	`PUT 'customer.dat'`
		`GET 'miller\customer.dat'`
		`PUT '\DEV\RMT0'`

Slashed b (b̸)	Indicates a space (blank). The example indicates that four spaces appear between the keywords.	`BEGNb̸b̸b̸b̸SERIAL`
Brackets [ ]	Indicate optional selection of parameters. (Do not attempt to enter brackets or to stack parameters.) Brackets indicate one of the following situations:	
	A single item enclosed by brackets indicates that the item is optional and can be omitted. The example indicates that you can optionally enter a WHERE clause.	`[WHERE search-condition]`
	Stacked items enclosed by brackets represent optional alternatives, one of which can be selected. The example indicates that you can optionally enter either WAIT or NOWAIT. (WAIT is underlined to signify that it is the default.)	$\begin{bmatrix} \textbf{(WAIT)} \\ \textbf{(NOWAIT)} \end{bmatrix}$
Braces { }	Indicate selection of parameters. (Do not attempt to enter braces or to stack parameters.) Braces surrounding stacked items represent alternatives, one of which you must select. The example indicates that you must enter ON or OFF when using the MONITOR statement.	$\textbf{MONITOR} \begin{Bmatrix} \textbf{ON} \\ \textbf{OFF} \end{Bmatrix}$

Convention	Description	Example
<u>Underlining</u> (In syntax)	Indicates the default value supplied when you omit a parameter. The example indicates that if you do not choose a parameter, the system defaults to WAIT.	$\begin{bmatrix} \textbf{(WAIT)} \\ \textbf{(NOWAIT)} \end{bmatrix}$
	Underlining also indicates an allowable abbreviation or the shortest truncation allowed. The example indicates that you can enter either STAT or STATISTICS.	<u>STAT</u>ISTICS
Ellipsis points...	Indicate that the preceding item can be repeated. The example indicates that you can enter multiple host variables and associated indicator variables.	`INTO :host-variable [:ind-variable],...`
UPPERCASE lowercase	In most operating environments, keywords are not case-sensitive, and they are represented in uppercase. You can enter them in either uppercase or lowercase.	`COPY MY_DATA.SEQ` `HOLD_DATA.SEQ`
	In the UNIX operating environment, keywords are case-sensitive, and you must enter them exactly as shown.	`cp *.QAR /backup`
Italics	Indicate variables you replace with a value, a column name, a file name, and so on. The example indicates that you must substitute the name of a table.	`FROM table-name`

Punctuation marks	Indicate required syntax that you must code exactly as presented.
	
	( ) parentheses
	. period
	, comma
	: colon
	' ' single quotation marks
		`(user-id, password, db-name)`
		`INFILE 'Cust.Memo' CONTROL`
		`   LEN4`

SMALL CAPS	Represent a keystroke. Multiple keystrokes are hyphenated.	ALT-TAB

SUPRA Server documentation series

SUPRA Server is the advanced relational database management system for high-volume, update-oriented production processing. A number of tools are available with SUPRA Server including DBA Functions, DBAID, precompilers, SPECTRA, and MANTIS. The following list shows the manuals and tools used to fulfill the data management and retrieval requirements for various tasks. Some of these tools are optional. Therefore, you may not have all the manuals listed.

Getting started

♦ *SUPRA Server PDM UNIX Installation Guide*, P25-1008

♦ *SUPRA Server PDM UNIX Tutorial*, T25-2262

General use

♦ *SUPRA Server PDM Glossary*, P26-0675

♦ *SUPRA Server PDM Messages and Codes Reference Manual (PDM/RDM Support for UNIX & VMS)*, P25-0022

Database administration tasks

♦ *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260

♦ *SUPRA Server PDM System Administration Guide (UNIX)*, P25-0132*

♦ *SUPRA Server PDM Utilities Reference Manual (UNIX & VMS)*, P25-6220

♦ *SUPRA Server PDM Windows Client Support User's Guide*, P26-7500*

♦ *SPECTRA Administrator's Guide*, P26-9220**
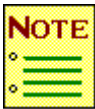
> **NOTE**
> Manuals marked with an asterisk (*) are listed twice because you use them for different tasks.

Application programming tasks

♦ *SUPRA Server PDM Programming Guide (UNIX & VMS)*, P25-0240

♦ *SUPRA Server PDM System Administration Guide (UNIX)*, P25-0132*

♦ *MANTIS Planning Guide*, P25-1315**

♦ *SUPRA Server PDM Windows Client Support User's Guide*, P26-7500*

Report tasks

♦ *SPECTRA User's Guide*, P26-9561**
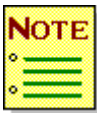
NOTE

Manuals marked with an asterisk (*) are listed twice because you use them for different tasks.

NOTE
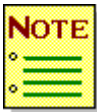
Educational material is available from your regional Cincom education department.

1

Introduction

The *SUPRA Server PDM UNIX Tutorial* complements and supports the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260, and the *SUPRA Server PDM System Administration Guide (UNIX)*, P25-0132. The tutorial is a prerequisite for users who are not experienced in creating database descriptions, data sets, data items, task logs, or systems logs. The tutorial also helps users who want to refresh their memory. A user implementing the concepts discussed in the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260, and the *SUPRA Server PDM System Administration Guide (UNIX)*, P25-0132, can use this tutorial as a reference text.

The tutorial guides you through the steps to create a database. It uses a sample database to illustrate how to perform the following tasks:

♦ Define a database including data sets and task and system logs (see "Creating a database description" on page 17)

♦ Validate and compile a database (see "Validating and compiling a database" on page 105)

♦ Format the physical data set recovery logs and index files (see "Formatting database files" on page 113)

By following the instructions, you will end up with a small database to which you may add data.

NOTE
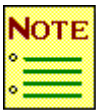
A glossary of terms that you may encounter as you build your sample database has been provided with this tutorial.

Prerequisites

This tutorial describes how to use SUPRA DBA. It assumes your DBA has set up any necessary system-level parameters and logical names. However, in addition to these, you need to create a number of database-specific logical names. Therefore, before you start this tutorial, define these logical names:

♦ Identify the UNIX directory where you will create all of the physical files used by the database.

```
csideflog -g EDUC_DBA path
```

♦ Identify the preferred machine list for the database.

```
csideflog -g PERSON_CSI_PDM_MACS mac1,mac2,...
```

♦ Assign a 6-character logical name to the compiled database description file.

```
csideflog -g PERSON EDUC_DBA:person.mod
```

♦ Enable automatic system log dumping.

```
csideflog -g DUMPSLF_PERSON EDUC_DBA:person_dump.inp
```

♦ When you enable system log dumping, create an input file with the name person_dump.inp that contains the following three lines:

```
EDUC_DBA
PERSON_DUMP
EDUC_DBA
```

For more information about the contents of the system-log-dumping input file, refer to the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260. Refer to the *SUPRA Server PDM System Administration Guide (UNIX)*, P25-0132, for a detailed description of logical names and system parameters.

Make sure you have at least 5000 blocks of free disk space available on your system. This space is needed by the database files you will create in "Validating and compiling a database" on page 105 and "Formatting database files" on page 113.

NOTE
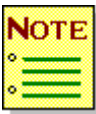
The instructions throughout this tutorial lead you to generate a groupwide database.

Overview of the PERSON database

The PERSON database consists of three data sets. You define these entities using SUPRA DBA. The following figure illustrates the entities in the PERSON database:
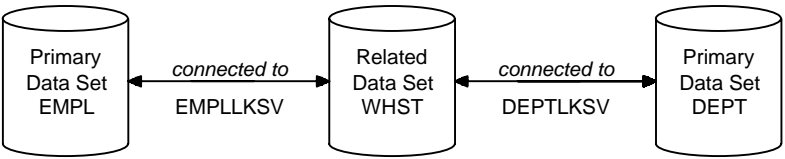
In "Creating a database description" on page 17, you will create the data sets that make up the PERSON database. You will create EMPL and DEPT, which are primary data sets, and WHST, the related data set that is connected to EMPL and DEPT. The data items in these data sets are:

Primary data set EMPL	Related data set WHST	Primary data set DEPT
EMPLCTRL=6	WHSTEMPL=6	DEPTCTRL=4
EMPLNAME=20	EMPLLKSV=8=WHSTEMPL	DEPTNAME=20
EMPLADDR=37(subdefined)	WHSTDEPT=4	DEPTMNGR=6
EMPLSTRT=15	DEPTLKSV=8=WHSTDEPT	DEPTSTAF=3
EMPLCITY=15	WHSTDURA=2	DEPTLKSV=8
EMPLSTAT=2	WHSTTITL=15	
EMPLZIPC=5		
EMPLDEPT=4		
EMPLLKSV=8		

NOTE	Physical data items are shown in capital letters and subdefined data items are indented.

In addition to creating these database entities, you will define both task and system logging to ensure optimum data protection.

You will create all of the data files for the PERSON database in the UNIX directory pointed to by the logical name EDUC_DBA. After you have finished the tutorial, this directory will contain the following files:

File name	Description
DEPT.PER	DEPT data set data file. Contains department records. Created in "Defining the record layout for DEPT" on page 65.
EMPL.PER	EMPL data set data file. Contains employee records. Created in "Defining the record layout for EMPL" on page 28.
PERSON.MOD	Compiled database description file. Equates to the logical name PERSON. Created in "Validating and compiling a database" on page 105.
SLOG1.PER	First system log component. Created in "Defining a system log" on page 102.
SLOG2.PER	Second system log component. Created in "Defining a system log" on page 102.
TLOG.PER	Task log data file. Created in "Defining a task log" on page 100.
WHST.PER	WHST data set data file. Contains work history records. Created in "Creating the related data set WHST" on page 80.

Displaying online Help text

SUPRA DBA, the component of SUPRA that we use in this tutorial, offers online Help text. You can display online Help at any time while using SUPRA DBA.

In SUPRA DBA, you access context-sensitive online Help by pressing PF2. If the screen contains a menu, the Help text describes each option on the menu. If the screen prompts you for input, for instance, entering database details, you can position your cursor in any data entry field and press PF2 to obtain help on what you should enter. SUPRA DBA also provides help for messages. Most error messages end with PF1/2; this means press PF1 to clear the message or press PF2 to display help about the message. At any time during this tutorial, press PF2 to obtain more information about the task you are performing. Press CTRL-Z to exit the help system, or press RETURN at the "Subject:" prompt.

Now turn to "Creating a database description" on page 17 to invoke SUPRA DBA and create the PERSON database.

2

Creating a database description

SUPRA processes the DBA functions through a series of formatted screens. These screens prompt you to select options from menus and enter data. Your responses must pass certain validation checks before SUPRA DBA accepts them. If you enter an invalid response, SUPRA DBA displays a message and pauses for you to make corrections. If you are unsure of how to enter the required input, you can display online Help by pressing PF2. Online Help text is available at any time during SUPRA DBA processing.

To invoke a SUPRA component, enter the name of the component at the UNIX system prompt. Invoke SUPRA DBA by entering:

```
csidba
```

At the SUPRA Sign-on screen, enter your user name and press RETURN, then enter your password and press RETURN.
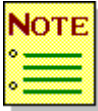
> **NOTE** Your user name and password should have been set by your DBA with a user access authority of DA (DBA/UTILITIES) or above. If not, refer to the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260, for details of how to set up user name/password combinations.

```
CINCOM SYSTEMS   SUPRA DATABASE ADMINISTRATION   RELEASE 1.1   8-Jun-94  09:02


          ***                ***
       *******            *******
     *********          *********
   ***********        ***********
  *************      *************
 *************      *************
 *************      *************
                                       Username =
 *************      *************
 *************      *************      Password =
  *************      *************
   ***********        ***********
    *********          *********
       *******      *******
          ***      ***


   CINCOM SYSTEMS              SUPRA DBA


```

Defining database details

SUPRA DBA displays the DBA Function Selection menu. The DBA Function Selection menu provides access to the database maintenance and utility functions. To create a database description, enter 1 and press RETURN.

```
CINCOM SYSTEMS    SUPRA DBA - FUNCTION SELECTION FOR THE DBA    8-Jun-94   09:03

                    Select required function :
             1 : Database descriptions
             2 : Data sets
             3 : Reserved
             4 : Reserved
             5 : Reserved
             6 : Reserved
             7 : Reserved
             8 : Users
             9 : Unlock functions
            10 : Administration functions

                    Enter choice no.: 1
```

If you press RETURN or PF1 before selecting a function, the message, "Do you want to exit from the DBA System? (Y,N):" appears. If this message appears, enter N, press RETURN, and enter the number of your choice.

You can exit any session of the tutorial by pressing PF1 or CTRL-D until you reach the DBA Function Selection menu shown above. At this screen, press PF1 one time and the "Do you want to exit from the DBA System? (Y,N):" prompt appears. Enter Y and press RETURN to exit, or enter N and press RETURN to continue.

SUPRA DBA returns the Database Description Function menu. You use the Database Description Function menu to create and maintain database definitions. To create a database, enter 3 and press RETURN. When the message "Create database description name:" appears, enter PERSON and press RETURN.

```
CINCOM SYSTEMS    SUPRA DBA - DATABASE DESCRIPTION FUNCTION   8-Jun-94  09:04

                  Function for database descriptions:
           1 : Examine
           2 : Modify
           3 : Create
           4 : Delete
           5 : Copy
           6 : List
           7 : Print
           8 : Validate
           9 : Compile and print
          10 : List logical views for the database
          11 : Data set functions

              Enter choice no.: 3


 Create database description name
  : PERSON
```

SUPRA DBA returns the Database Description Maintenance screen. Use this screen to define the database details. SUPRA DBA displays default values and positions your cursor in the DATABASE-PASSWORD field for you to define a password. Enter the password CINCOM and press RETURN to position your cursor at the next field. Press RETURN to bypass the MAX-HELD-RECORDS field. Change the MAX-TASKS field to the number 2 by overtyping and press RETURN. Press PF1 to display the updates and the "Enter field number to modify a field (or <PF1> to exit):" prompt.

```
CINCOM SYSTEMS  SUPRA DBA - DATABASE DESCRIPTION MAINTENANCE  8-Jun-94  09:05


  1 : DATABASE-DESCRIPTION-NAME    : PERSON
  2 : DATABASE-PASSWORD            : CINCOM
  3 : MAX-HELD-RECORDS             : 16
  4 : MAX-TASKS                    : 2
  5 : MAX-UPDATE-TASKS             : 10
  6 : SHADOW-OPTION                : N
  7 : SINGLE-TASK                  : N
  8 : DATABASE-DESCRIPTION-STATUS  : BEING MODIFIED
  9 : DATE-COMPILED                :
 10 : TIME-COMPILED                :
 11 : BYTE-ORDER                   : NETWORK
 12 : GLOBAL-SECTION-TYPE          : GROUP
 13 : CALLING-MECHANISM            : REFERENCE
 14 : NETWORK-SUPPORT              : YES
```

Your updates to the Database Description Maintenance screen are displayed. SUPRA DBA displays the "Enter field number to modify a field (or <PF1> to exit):" prompt.

Notice that you have set the maximum number of tasks that can use the database at one time (MAX-TASKS) to 2, whereas the number of tasks that can sign on to the database in update mode (MAX-UPDATE-TASKS) remains at 10. This is an invalid combination because the maximum number of update tasks should never exceed the maximum number of tasks.

You must return to the MAX-UPDATE-TASKS field to alter it. Enter 5 and press RETURN to position your cursor at the MAX-UPDATE-TASKS field and overtype the value 10 with the value 2. Press RETURN to update the field. Press PF1 or RETURN to exit the Database Description Maintenance screen.

```
CINCOM SYSTEMS  SUPRA DBA - DATABASE DESCRIPTION MAINTENANCE  8-Jun-94  09:06


   1 : DATABASE-DESCRIPTION-NAME     : PERSON
   2 : DATABASE-PASSWORD             : CINCOM
   3 : MAX-HELD-RECORDS              : 16
   4 : MAX-TASKS                     : 2
   5 : MAX-UPDATE-TASKS              : 2
   6 : SHADOW-OPTION                 : N
   7 : SINGLE-TASK                   : N
   8 : DATABASE-DESCRIPTION-STATUS   : BEING MODIFIED
   9 : DATE-COMPILED                 :
  10 : TIME-COMPILED                 :
  11 : BYTE ORDER                    : NETWORK
  12 : GLOBAL-SECTION-TYPE           : GROUP
  13 : CALLING-MECHANISM             : REFERENCE
  14 : NETWORK-SUPPORT               : YES


    Enter field number to modify a field (or <PF1> to exit): 5



```

After you exit the Maintenance screen, SUPRA DBA returns the Comment screen. You use the Comment screen to enter comments about the database description and any database entity associated with that description. You will not enter comments during this part of the tutorial for the database description. To skip over the Comment screen, press RETURN or PF1.

```
CINCOM SYSTEMS                COMMENTS for PERSON              8-Jun-94  09:07


No COMMENTS written yet











action : A,C,D,F,L,M,N,O,P,R or W - Hit <PF2> for explanation
:
```

Creating the primary data set EMPL

When you exit the Comment screen, SUPRA DBA returns the Data Set Function menu.

SUPRA DBA connects any data sets you create to the database. For a primary or related data set, SUPRA DBA then prompts for the buffer used by the data set.

You will first create a primary data set. Enter 3 and press RETURN at the Function for Data Sets menu. DBA displays the "Create primary data set:" prompt. Enter EMPL and press RETURN to create a data set called EMPL and display its physical file attributes.

```
CINCOM SYSTEMS            SUPRA DBA - DATA SET FUNCTION          8-Jun-94  09:08

                   Function for data sets:
            1 : Examine data set
            2 : Modify data set
            3 : Create primary data set
            4 : Create related data set
            5 : Reserved
            6 : Delete data set
            7 : List all data sets
            8 : Connect an existing data set
            9 : Disconnect an existing data set
           10 : List databases using data set

                   Enter choice no.: 3

       Create primary data set:   EMPL




```

Defining physical file attributes for EMPL

The Physical File Attributes screen specifies the physical disk files and corresponding shadow files to hold all or part of a data set. As with the Database Description Maintenance screen, SUPRA DBA positions your cursor at the first field you can modify.

Press RETURN three times to accept the first three default values and to position your cursor at the FILE-SPEC-1 field. You do not need to update the TOTAL-LOGICAL-RECORDS field because SUPRA DBA calculates this value during database validation. For this sample database, you can accept the defaults supplied by DBA for LOGICAL-RECORDS-PER-BLOCK and ACCESS-MODE, although you may wish to change them when you define your own databases.

Enter EDUC_DBA:EMPL.PER and press RETURN to update the field. Press PF1 to display the "Enter field number to modify a field (or <PF1> to exit):" prompt, and press PF1 or RETURN again to exit this screen.

```
CINCOM SYSTEMS    FILE FOR DATA SET EMPL AND DATABASE PERSON  8-Jun-94  09:09

  1 : TOTAL-LOGICAL-RECORDS        :0
  2 : LOGICAL-RECORDS-PER-BLOCK    :10
  3 : ACCESS-MODE                  :UPDATE
  4 : FILE-SPEC-1                  :EDUC_DBA:EMPL.PER
  5 : SHADOW-FILE-SPEC-1           :
  6 : ALLOCATION-1                 :
  7 : FILE-SPEC-2                  :
  8 : SHADOW-FILE-SPEC-2           :
  9 : ALLOCATION-2                 :
 10 : FILE-SPEC-3                  :
 11 : SHADOW-FILE-SPEC-3           :
 12 : ALLOCATION-3                 :
 13 : FILE-SPEC-4                  :
 14 : SHADOW-FILE-SPEC-4           :
 15 : ALLOCATION-4                 :

Enter field number to modify a field (or <PF1> to exit): PF1
```

The Comment screen is next. This screen is the same format throughout the database description process. You will not enter any comments for the primary data set EMPL. Press either RETURN or PF1 to exit this screen.

Creating a primary buffer for EMPL

SUPRA DBA returns the Buffer screen. The buffer is the area where SUPRA stores data while it is being manipulated. The screen displays the "BUFFER for this data set:" prompt. Enter PBUF and press RETURN. SUPRA DBA then displays the "This buffer does not exist. Do you want to create it (Y,N):" prompt. Enter Y and press RETURN to create the buffer and display the Buffer Details screen.

```
CINCOM SYSTEMS                BUFFER FOR DATA SET EMPL           8-Jun-94  09:10

    BUFFER for this data set:  PBUF

    This buffer does not exist
    Do you want to create it (Y,N): Y




```

SUPRA DBA returns the Buffer Details screen. When you add a buffer, the screen displays the default values. The only value you can change is the number of copies; SUPRA DBA calculates the BUFFER-SIZE during validation.

You do not need to change anything on this screen. Press RETURN to display the "Enter field number to modify a field (or <PF1> to exit):" prompt, and press PF1 or RETURN to exit this screen.

```
CINCOM SYSTEMS              BUFFER : PERSON PBUF            8-Jun-94  09:11


  1 : BUFFER-NAME                 : PBUF
  2 : NUMBER-OF-COPIES-OF-BUFFER  : 5
  3 : PRIMARY-OR-RELATED-BUFFER   : PRIMARY
  4 : BUFFER-SIZE                 : 0


Enter field number to modify a field (or <PF1> to exit): PF1
```

The Comment screen follows the Details screen. You do not need to input any comments here. Press either RETURN or PF1 to exit this screen and move to the Primary Record Function menu.

Defining the record layout for EMPL

SUPRA DBA returns the Primary Record Function menu. You create and process primary data items in a hierarchy, and define data items up to six levels. The first level is the outer level. The minimum record length for a primary data set (the combined length of all its data items) is 21 bytes.

Enter 2 and press RETURN.

```
CINCOM SYSTEMS          SUPRA DBA - PRIMARY RECORD FUNCTION      8-Jun-94  09:12

                        Function for data set EMPL
                  1 : Examine primary data items
                  2 : Modify primary data items
                  3 : List primary data items

                     Enter choice no.:  2
```

SUPRA DBA returns the Data Items screen. This screen provides you with information about EMPLROOT and EMPLCTRL, and it displays the "Length of EMPLCTRL:" prompt. Enter 6 and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:13

     2 data items at the outer level :

  1  EMPLROOT=8
  2  EMPLCTRL=0
     ** End of list **





Length of EMPLCTRL:  6



```

SUPRA DBA redisplays the screen and inserts a 6 in line 2 for the length of EMPLCTRL. At the bottom of the screen, DBA displays the "Select data item number or function (List,Modify,Add,Delete,Copy):" prompt. Enter A and press RETURN.

At the next prompt, "Add data item following data item", enter 2 and press RETURN. DBA now displays the "Four-character data item name:" prompt. Enter NAME and press RETURN. The "Data item length (or hit <PF4> to add sub-data-items):" prompt displays. Enter 20 and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:14

     2 data items at the outer level :

 1   EMPLROOT=8
 2   EMPLCTRL=6
       ** End of list **











 Select data item number or function (List,Modify,Add,Delete,Copy) : A
 Add data item following data item number: 2
 Four-character data item name : NAME
 Data item length (or hit <PF4> to add sub-data-items) : 20


```

SUPRA DBA redisplays the prompts at the bottom of the screen. Enter ADDR at the "Four-character data item name:" prompt and press RETURN. For the "Data item length (or hit <PF4> to add sub-data-items):" prompt, press PF4 to add subdata items.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:15

       3 data items at the outer level :

  1   EMPLROOT=8
  2   EMPLCTRL=6
       ** End of list **
```

```
Select data item number or function (List,Modify,Add,Delete,Copy) : A
Add data item following data item EMPLNAME
Four-character data item name : ADDR
Data item length (or hit <PF4> to add sub-data-items) : PF4
```

You will subdefine ADDR into four subdata items: STRT, CITY, STAT, and ZIPC. SUPRA DBA returns the following screen for you to enter the first subdata item. Enter STRT at the "Four-character data item name:" prompt and press RETURN. Enter 15 at the "Data item length (or hit <PF4> to add sub-data-items):" prompt and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:16

  Current data item : EMPLADDR        Level : 0      Filler : N

  Add data items at level 1










  Four-character data item name: STRT
  Data item length (or hit <PF4> to add sub-data-items) : 15

```

SUPRA DBA redisplays the prompts, displays the name of the subdata item you have just defined, and prompts you for the same information. Enter CITY at the "Four-character data item name:" prompt and press RETURN. Enter 15 at the "Data item length (or hit <PF4> to add sub-data-items):" prompt and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:17

  Current data item : EMPLADDR        Level : 0      Filler : N

  Add data items at level 1













  Add data item following data item EMPLSTRT
  Four-character data item name: CITY
  Data item length (or hit <PF4> to add sub-data-items) : 15


```

SUPRA DBA redisplays the prompts, displays the name of the subdata item you have just defined, and prompts you for the same information. Enter STAT at the "Four-character data item name:" prompt and press RETURN. Enter 2 at the "Data item length (or hit <PF4> to add sub-data-items):" prompt and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:18

  Current data item : EMPLADDR        Level : 0      Filler : N

  Add data items at level 1

  Add data item following data item EMPLCITY
  Four-character data item name: STAT
  Data item length (or hit <PF4> to add sub-data-items) : 2
```

SUPRA DBA redisplays the prompts, displays the name of the subdata item you just defined, and prompts you for the same information. Enter ZIPC at the "Four-character data item name:" prompt and press RETURN. Enter 5 at the "Data item length (or hit <PF4> to add sub-data-items):" prompt and press RETURN. Press RETURN to exit this screen and display the Data Item screen.

NOTE Pressing PF1 at this point redisplays the Primary Record Function menu.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94   09:19

  Current data item : EMPLADDR         Level : 0      Filler : N

  Add data items at level 1












  Add data item following data item EMPLSTAT
  Four-character data item name: ZIPC
  Data item length (or hit <PF4> to add sub-data-items) : 5

```

SUPRA DBA redisplays the screen, displays the new data item
EMPLADDR, and notes the number of subdefined data items. At the
bottom of the screen, DBA displays the "Add data item following data
item number:" prompt. Enter 4 and press RETURN. DBA now displays
the "Four-character data item name:" prompt. Enter DEPT and press
RETURN. At the "Data item length (or hit <PF4> to add sub-data-items):"
prompt, enter 4 and press RETURN.

```
CINCOM SYSTEMS    SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:20

        4 data items at the outer level :

 1   EMPLROOT=8
 2   EMPLCTRL=6
 3   EMPLNAME=20
 4   EMPLADDR      (4 sub-data-items)
        ** End of list **











 Add data item following data item number: 4
 Four-character data item name: DEPT
 Data item length (or hit <PF4> to add sub-data-items) : 4
```

SUPRA DBA redisplays the prompts. Enter LKSV at the "Four-character data item name:" prompt and press RETURN. LKSV is the linkpath for the data set. You do not need to enter a length for this data item; SUPRA DBA automatically sets the length of all linkpaths to 8. Press RETURN to redisplay this screen showing all the data items you have defined.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:21

      4 data items at the outer level :

  1  EMPLROOT=8
  2  EMPLCTRL=6
  3  EMPLNAME=20
  4  EMPLADDR      (4 sub-data-items)
     ** End of list **









  Add data item following data item EMPLDEPT
  Four-character data item name: LKSV

```

SUPRA DBA redisplays the Data Item screen with the new data items added. Press PF1 or RETURN to return to the Primary Record Function menu.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN EMPL PRIMARY-DATA  8-Jun-94  09:22

      6 data items at the outer level :

 1   EMPLROOT=8
 2   EMPLCTRL=6
 3   EMPLNAME=20
 4   EMPLADDR     (4 sub-data-items)
 5   EMPLDEPT=4
 6   EMPLLKSV=8
     ** End of list **









  Select data item number or function (List,Modify,Add,Delete,Copy) : PF1

```

SUPRA DBA returns the Primary Record Function menu. Press PF1 or
RETURN to exit this screen.

```
CINCOM SYSTEMS          SUPRA DBA - PRIMARY RECORD FUNCTION      8-Jun-94  09:23


                   Function for data set EMPL
                1 : Examine primary data items
                2 : Modify primary data items
                3 : List primary data items

                   Enter choice no.:   PF1
```

Creating indices for EMPL

SUPRA DBA prompts you to enter a 2-character index name. Enter the index name NO and press RETURN to display the Index File Specification screen.

```
CINCOM SYSTEMS     SUPRA DBA  -  DATA SET INDEX CREATION     8-Jun-94  09:24




















            Index name : NO
```

For more information on indices, refer to the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260.

SUPRA DBA displays the Index File Specification screen, and positions your cursor at the first field that you can modify. In this tutorial, you can accept the defaults offered by SUPRA DBA for the first three fields.

Press RETURN three times to accept the first three default values and to move your cursor to the INDEX-FILE-SPEC field. Enter EDUC_DBA:EMPLIXNO.PER. Press RETURN to update the field. Press RETURN a second time to bypass the INDEX-SHADOW-FILE-SPEC field and display the "Enter field number to modify a field (or <PF1> to exit):" prompt. Press PF1 to exit this screen.

```
CINCOM SYSTEMS   INDEX-FILE-SP: EMPLIXNO   PERSON FILE-SPEC   8-Jun-94  09:25

    1 : INDEX-CORRUPT-ACTION          :OPERATOR
    2 : INDEX-NULL-SORTING            :HIGH
    3 : INDEX-READ-VERIFY             :YES
    4 : INDEX-FILE-SPEC               :EDUC_DBA:EMPLIXNO.PER
    5 : INDEX-SHADOW-FILE-SPEC        :

    Enter field number to modify a field (or <PF1> to exit) : PF1
```

The Comment screen follows the File Specification screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the "Secondary Key name:" prompt.

SUPRA DBA prompts you to enter a 2-character secondary key name. Enter the key name NO and press RETURN to display the Secondary Key Attributes screen.

```
CINCOM SYSTEMS     SUPRA DBA  -  SECONDARY KEY PROCESSING    8-Jun-94  09:26












          Secondary Key name : NO



```

SUPRA DBA displays the Secondary Key Attributes screen for you to define the physical attributes of the secondary key. In this tutorial, you can accept the defaults set up by SUPRA DBA. Press PF1 to display the "Enter field number to modify a field (or <PF1> to exit):" prompt. Press PF1 to exit this screen.

```
CINCOM SYSTEMS              SECONDARY-KEY : EMPLSKNO          8-Jun-94  09:27

          1 : SECONDARY-KEY-NAME            :EMPLSKNO
          2 : SEC-KEY-UNIQUE                :NO
          3 : SEC-KEY-DIRECTION             :FORWARD
          4 : SEC-KEY-POINTER-ORDERING      :NO
          5 : SEC-KEY-POINTER-TYPE          :DIRECT
          6 : SEC-KEY-DATA-TYPE-SORTING     :NO
          7 : SEC-KEY-DUPLICATES            :5

      Enter field number to modify a field (or <PF1> to exit) : PF1
```

The Comment screen follows the Secondary Key Attributes screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the Data Items for Secondary Key screen.

SUPRA DBA displays the Data Items for Secondary Key screen. Because this is a new secondary key, no connected data items exist. Enter CTRL at the "Enter 4-character data item name:" prompt and enter C at the "Enter data item type:" prompt. Press RETURN to update the screen.

```
CINCOM SYSTEMS    SUPRA DBA  - DATA ITEMS FOR SECONDARY KEY   8-Jun-94  09:28

DATA ITEMS CONNECTED TO SECONDARY KEY NO

          *** No data items connected ***

















          Enter 4-character data item name : CTRL
          Enter data item type (B,C,F,K,L,N,P,T,Z) : C
```

SUPRA DBA redisplays the screen to indicate that you have included the data item EMPLCTRL in the secondary key NO and prompts you to include another data item. Press RETURN to finish including data items. SUPRA DBA displays the message "024 Secondary key created successfully." Press PF1 to exit this screen.

```
CINCOM SYSTEMS     SUPRA  DBA - DATA ITEMS FOR SECONDARY KEY   8-Jun-94  09:29

       Data items connected to Secondary Key (NO)

          1.   EMPLCTRL       C
                    *** End of list ***












          Add data item after data item EMPLCTRL
          Enter 4-character data item name:



024 Secondary key created successfully                          <PF1/2>

```

You have now defined a secondary key on the employee number data item. This means you can write applications to return employee records in employee number order. You can also perform generic reads on this data item, omitting parts of the secondary key from the right. For example, if you have the following employee numbers: 1200064, 1200100, 1200104, 1200214, and 1200316, you could retrieve only those employees with a number beginning with the digits 12001.

SUPRA DBA prompts you to enter a 2-character secondary key name. Do not enter a secondary key name; instead, press PF1 to display the message "024 index created successfully." Press PF1 to exit this screen.

```
CINCOM SYSTEMS      SUPRA DBA  -  SECONDARY KEY PROCESSING   8-Jun-94  09:30












            Secondary Key name : PF1

024 INDEX CREATED SUCCESSFULLY                            <PF1/2>

```

SUPRA DBA prompts you to enter another 2-character index name. Enter the index name NM and press RETURN to display the Index File Specification screen.

```
CINCOM SYSTEMS     SUPRA DBA - DATA SET INDEX CREATION        8-Jun-94  09:32




   

   


   


   

      Index name : NM


```

SUPRA DBA displays the Index File Specification screen and positions your cursor at the first field that you can modify. In this tutorial, you can accept the defaults offered by SUPRA DBA for the first three fields.

Press RETURN three times to accept the first three default values and to move your cursor to the INDEX-FILE-SPEC field. Enter EDUC_DBA:EMPLIXNM.PER. Press RETURN to update the field. Press RETURN a second time to bypass the INDEX SHADOW-FILE-SPEC field and to display the "Enter field number to modify a field (or <PF1> to exit):" prompt. Press PF1 to exit this screen.

```
CINCOM SYSTEMS   INDEX-FILE-SP: EMPLIXNM   PERSON FILE-SPEC  8-Jun-94  09:33

  1 : INDEX-CORRUPT-ACTION          :OPERATOR
  2 : INDEX-NULL-SORTING            :HIGH
  3 : INDEX-READ-VERIFY             :YES
  4 : INDEX-FILE-SPEC               :EDUC_DBA:EMPLIXNM.PER
  5 : INDEX-SHADOW-FILE-SPEC        :

  Enter field number to modify a field (or <PF1> to exit) : PF1
```

The Comment screen follows the Index File Specification screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the "Secondary Key name:" prompt.

SUPRA DBA prompts you to enter a 2-character secondary key name.
Enter the key name NM and press RETURN to display the Secondary Key
Attributes screen.

```
CINCOM SYSTEMS     SUPRA DBA  -  SECONDARY KEY PROCESSING   8-Jun-94  09:34










          Secondary Key name :  NM


```

SUPRA DBA displays the Secondary Key Attributes screen for you to
define the physical attributes of the secondary key. In this tutorial, you
can accept the defaults set up by SUPRA DBA. Press PF1 to display the
"Enter field number to modify a field (or <PF1> to exit):" prompt. Press
PF1 to exit this screen.

```
CINCOM SYSTEMS              SECONDARY-KEY : EMPLSKNM          8-Jun-94  09:35

         1 : SECONDARY-KEY-NAME             :EMPLSKNM
         2 : SEC-KEY-UNIQUE                 :NO
         3 : SEC-KEY-DIRECTION              :FORWARD
         4 : SEC-KEY-POINTER-ORDERING       :NO
         5 : SEC-KEY-POINTER-TYPE           :DIRECT
         6 : SEC-KEY-DATA-TYPE-SORTING      :NO
         7 : SEC-KEY-DUPLICATES             :5

      Enter field number to modify a field (or <PF1> to exit) : PF1
```

The Comment screen follows the Attributes screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the Data Items for Secondary Key screen. SUPRA DBA displays the Data Items for Secondary Key screen. Because this is a new secondary key, no connected data items exist. Enter NAME at the "Enter 4-character data item name:" prompt and enter C at the "Enter data item type:" prompt. Press RETURN to update the screen.

```
CINCOM SYSTEMS    SUPRA DBA  - DATA ITEMS FOR SECONDARY KEY   8-Jun-94  09:28

DATA ITEMS CONNECTED TO SECONDARY KEY NM

          *** No data items connected ***



          Enter 4-character data item name: NAME
          Enter data item type (B,C,F,K,L,N,P,T,Z) : C
```

SUPRA DBA redisplays the screen to indicate that you have included the data item EMPLNAME in the secondary key NM and prompts you to include another data item. Press RETURN to finish including data items. SUPRA DBA displays the message "024 Secondary key created successfully." Press PF1 to exit this screen.

```
CINCOM SYSTEMS          DATA ITEMS FOR SECONDARY KEY          8-Jun-94  09:37

       Data items connected to Secondary Key (NM)

          1.   EMPLNAME        C
                   *** End of list ***













          Add data item after data item EMPLNAME
          Enter 4-character data item name:


024 Secondary key created successfully                          <PF1/2>
```

You have now defined a secondary key on the employee name data item. This means that you can write applications to return employee records in employee name order. You can also perform generic reads on this data item, omitting parts of the secondary key from the right. For example, you could retrieve only those employees with a surname that began with the letters *TH*.

SUPRA DBA prompts you to enter a 2-character secondary key name. Do not enter a secondary key name; instead, press PF1 to display the message "024 index created successfully." Press PF1 to exit this screen.

```
CINCOM SYSTEMS     SUPRA DBA  -  SECONDARY KEY PROCESSING    8-Jun-94  09:38





           Secondary Key name : PF1


024 INDEX CREATED SUCCESSFULLY                                   <PF1/2>
```

SUPRA DBA prompts you to enter another 2-character index name.
Enter the index name DP and press RETURN to display the Index File
Specification screen.

```
CINCOM SYSTEMS     SUPRA DBA - DATA SET INDEX CREATION      8-Jun-94  09:32




              Index name : DP


```

SUPRA DBA displays the Index File Specification screen and positions
your cursor at the first field that you can modify. In this tutorial, you can
accept the defaults offered by SUPRA DBA for the first three fields.

Press RETURN three times to accept the first three default values and to move your cursor to the INDEX-FILE-SPEC field. Enter EDUC_DBA:EMPLIXDP.PER. Press RETURN to update the field. Press RETURN a second time to bypass the INDEX-SHADOW-FILE-SPEC field and display the "Enter field number to modify a field (or <PF1> to exit):" prompt. Press PF1 to exit this screen.

```
CINCOM SYSTEMS    INDEX-FILE-SP: EMPLIXDP   PERSON FILE-SPEC    8-Jun-94  09:33

    1 : INDEX-CORRUPT-ACTION           :OPERATOR
    2 : INDEX-NULL-SORTING             :HIGH
    3 : INDEX-READ-VERIFY              :YES
    4 : INDEX-FILE-SPEC                :EDUC_DBA:EMPLIXDP.PER
    5 : INDEX-SHADOW-FILE-SPEC         :

    Enter field number to modify a field (or <PF1> to exit) : PF1
```

The Comment screen follows the Index File Specification screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the "Secondary Key name:" prompt.

SUPRA DBA now prompts you to enter a 2-character secondary key name. Enter the key name DP and press RETURN to display the Secondary Key Attributes screen.

```
CINCOM SYSTEMS     SUPRA DBA  -  SECONDARY KEY PROCESSING    8-Jun-94  09:34




            Secondary Key name : DP

```

SUPRA DBA displays the Secondary Key Attributes screen for you to define the physical attributes of the secondary key. In this tutorial, you can accept the defaults set up by SUPRA DBA. Press PF1 to display the "Enter field number to modify a field (or <PF1> to exit):". Press PF1 to exit this screen.

```
CINCOM SYSTEMS              SECONDARY-KEY : EMPLSKDP          8-Jun-94  09:35

          1 : SECONDARY-KEY-NAME              :EMPLSKDP
          2 : SEC-KEY-UNIQUE                  :NO
          3 : SEC-KEY-DIRECTION               :FORWARD
          4 : SEC-KEY-POINTER-ORDERING        :NO
          5 : SEC-KEY-POINTER-TYPE            :DIRECT
          6 : SEC-KEY-DATA-TYPE-SORTING       :NO
          7 : SEC-KEY-DUPLICATES              :5

       Enter field number to modify a field (or <PF1> to exit) : PF1
```

The Comment screen follows the Secondary Key Attributes screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the Data Items for Secondary Key screen.

SUPRA DBA displays the Data Items for Secondary Key screen. Because this is a new secondary key, no connected data items exist. Enter DEPT at the "Enter 4-character data item name:" prompt and enter C at the "Enter data item type:" prompt. Press RETURN to update the screen.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS FOR SECONDARY KEY    8-Jun-94  09:36

DATA ITEMS CONNECTED TO SECONDARY KEY DP

          *** No data items connected ***













          Enter 4-character data item name: DEPT
          Enter data item type (B,C,F,K,L,N,P,T,Z) : C


```

SUPRA DBA redisplays the screen to indicate you have included the data item EMPLDEPT in the secondary key DP and prompts you to include another data item. Press RETURN to finish including data items. SUPRA DBA displays the message "024 Secondary key created successfully." Press PF1 to exit this screen.

```
CINCOM SYSTEMS          DATA ITEMS FOR SECONDARY KEY          8-Jun-94  09:37

        Data items connected to Secondary Key (DP)

            1.   EMPLDEPT      C
                    *** End of list ***










           Add data item after data item EMPLDEPT
           Enter 4-character data item name:


024 Secondary key created successfully                            <PF1/2>
```

You have now defined a secondary key on the employee department data item. This means you can write applications to return employee records in employee department order. You can also perform generic reads on this data item, omitting parts of the secondary key from the right.

SUPRA DBA prompts you to enter a 2-character secondary key name.
Do not enter a secondary key name; instead, press PF1 to display the
message "024 index created successfully". Press PF1 to exit this screen.

```
CINCOM SYSTEMS     SUPRA DBA  -  SECONDARY KEY PROCESSING    8-Jun-94  09:38




















            Secondary Key name : PF1


024 INDEX CREATED SUCCESSFULLY                              <PF1/2>
```

SUPRA DBA prompts you to enter another 2-character index name.
Press PF1 to exit to the Data Set Function menu.

```
CINCOM SYSTEMS     SUPRA DBA - DATA SET INDEX CREATION     8-Jun-94  09:40












           INDEX NAME: PF1


```

Creating the primary data set DEPT

SUPRA DBA returns the Data Set Function menu. This is the same screen you used when you created the EMPL data set. You use the same screens for each data set you create. Enter 3 and press RETURN to create a primary data set. The "Create primary data set:" prompt appears. Enter DEPT and press RETURN.

```
CINCOM SYSTEMS           SUPRA DBA - DATA SET FUNCTION         8-Jun-94  09:41

                  Function for data sets:
         1 : Examine data set
         2 : Modify data set
         3 : Create primary data set
         4 : Create related data set
         5 : Reserved
         6 : Delete data set
         7 : List all data sets
         8 : Connect an existing data set
         9 : Disconnect an existing data set
        10 : List databases using data set

             Enter choice no.:  3

       Create primary data set:  DEPT
```

Specifying physical file attributes for DEPT

SUPRA DBA returns the Physical File Attributes screen and positions your cursor at the first field that you can modify.

Press RETURN three times to accept the first three defaults and to position your cursor at the FILE-SPEC-1 field. You do not need to update the TOTAL-LOGICAL-RECORDS field because SUPRA DBA calculates this value during database validation. For this sample database, you can accept the defaults supplied by DBA for LOGICAL-RECORDS-PER-BLOCK and ACCESS-MODE, although you may wish to change them when defining your own databases. For information on these fields, refer to the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260.

Enter EDUC_DBA:DEPT.PER and press RETURN to update the field. Press PF1 to display the "Enter field number to modify a field (or <PF1> to exit):" prompt and press PF1 or RETURN to exit this screen.

```
CINCOM SYSTEMS     FILE FOR DATA SET DEPT AND DATABASE PERSON 8-Jun-94  09:42

    1  : TOTAL-LOGICAL-RECORDS      :0
    2  : LOGICAL-RECORDS-PER-BLOCK  :10
    3  : ACCESS-MODE                :UPDATE
    4  : FILE-SPEC-1                :EDUC_DBA:DEPT.PER
    5  : SHADOW-FILE-SPEC-1         :
    6  : ALLOCATION-1               :
    7  : FILE-SPEC-2                :
    8  : SHADOW-FILE-SPEC-2         :
    9  : ALLOCATION-2               :
   10  : FILE-SPEC-3                :
   11  : SHADOW-FILE-SPEC-3         :
   12  : ALLOCATION-3               :
   13  : FILE-SPEC-4                :
   14  : SHADOW-FILE-SPEC-4         :
   15  : ALLOCATION-4               :

Enter field number to modify a field (or <PF1> to exit): PF1
```

SUPRA DBA returns the Comment screen. You do not need any comments for this data set. Press PF1 or RETURN to exit this screen.

Connecting DEPT to an existing primary buffer

When the buffer screen displays the "BUFFER for this data set:" prompt, enter PBUF and press RETURN. Because you have already created the buffer PBUF, DBA displays the Primary Record Function menu without prompting for any buffer details. Enter 2 and press RETURN to display the Data Item screen for the data set DEPT.

```
CINCOM SYSTEMS          SUPRA DBA - PRIMARY RECORD FUNCTION   8-Jun-94  09:43

                    Function for data set EMPL
              1 : Examine primary data items
              2 : Modify primary data items
              3 : List primary data items

                 Enter choice no.:   2
```

Defining the record layout for DEPT

SUPRA DBA returns the Data Item screen. You need to complete the same sequence of steps that you did when you created the data items for EMPL. The Data Item screen shows you there are two data items at the outer level, DEPTROOT with a length of 8 and DEPTCTRL without a length. The "Length of DEPTCTRL:" prompt appears at the bottom of the screen. Enter 4 and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN DEPT PRIMARY-DATA 8-Jun-94  09:44

     2 data items at the outer level :

  1  DEPTROOT=8
  2  DEPTCTRL=0
     ** End of list **










Length of DEPTCTRL : 4


```

SUPRA DBA redisplays the screen and adds a 4 in line 2 for the length of DEPTCTRL. At the bottom of the screen, DBA displays the "Select data item number or function (List,Modify,Add,Delete,Copy):" prompt. Enter A and press RETURN.

At the next prompt, "Add data item following data item number:", enter 2 and press RETURN. DBA now displays the "Four-character data item name:" prompt. Enter NAME and then press RETURN. The "Data item length (or hit <PF4> to add sub-data-items):" prompt displays. Enter 20 and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN DEPT PRIMARY-DATA 8-Jun-94  09:45

      2 data items at the outer level :

  1   DEPTROOT=8
  2   DEPTCTRL=4
         ** End of list **













  Select data item number or function (List,Modify,Add,Delete,Copy) : A
  Add data item following data item number: 2
  Four-character data item name : NAME
  Data item length (or hit <PF4> to add sub-data-items) : 20
```

SUPRA DBA redisplays the prompts at the bottom of the screen. Enter
MNGR at the "Four-character data item name:" prompt and press
RETURN. Enter 6 at the "Data item length (or hit <PF4> to add sub-data-
items):" prompt and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN DEPT PRIMARY-DATA 8-Jun-94  09:46

      2 data items at the outer level :

  1  DEPTROOT=8
  2  DEPTCTRL=4
      ** End of list **












  Select data item number or function (List,Modify,Add,Delete,Copy) : A
  Add data item following data item DEPTNAME
  Four-character data item name : MNGR
  Data item length (or hit <PF4> to add sub-data-items) : 6

```

SUPRA DBA redisplays the prompts at the bottom of the screen. Enter STAF at the "Four-character data item name:" prompt and press RETURN. Enter 3 at the "Data item length (or hit <PF4> to add sub-data-items):" prompt and press RETURN.

```
CINCOM SYSTEMS    SUPRA DBA - DATA ITEMS IN DEPT PRIMARY-DATA  8-Jun-94  09:47

      2 data items at the outer level :

 1  DEPTROOT=8
 2  DEPTCTRL=4
      ** End of list **












  Select data item number or function (List,Modify,Add,Delete,Copy) : A
  Add data item following data item DEPTMNGR
  Four-character data item name : STAF
  Data item length (or hit <PF4> to add sub-data-items) : 3
```

SUPRA DBA redisplays the prompts. Enter LKSV at the "Four-character data item name:" prompt and press RETURN. You do not need to enter a length for this data item; SUPRA DBA automatically sets the length of all linkpaths to 8. Press RETURN to redisplay this screen showing all the data items you have defined.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN DEPT PRIMARY-DATA 8-Jun-94  09:48

     2 data items at the outer level :

 1  DEPTROOT=8
 2  DEPTCTRL=4
    ** End of list **

















 Select data item number or function (List,Modify,Add,Delete,Copy) : A
 Add data item following data item DEPTSTAF
 Four-character data item name : LKSV

```

SUPRA DBA redisplays the Data Item screen with the new data items added. Press PF1 or RETURN to return to the Primary Record Function menu.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN DEPT PRIMARY-DATA 8-Jun-94  09:49

     6 data items at the outer level :

 1  DEPTROOT=8
 2  DEPTCTRL=4
 3  DEPTNAME=20
 4  DEPTMNGR=6
 5  DEPTSTAF=3
 6  DEPTLKSV=8
    ** End of list **







 Select data item number or function (List,Modify,Add,Delete,Copy) : PF1
```

SUPRA DBA returns the Primary Record Function menu. Press PF1 or
RETURN to exit this screen.

```
CINCOM SYSTEMS          SUPRA DBA - PRIMARY RECORD FUNCTION   8-Jun-94  09:50

                  Function for data set DEPT
              1 : Examine primary data items
              2 : Modify primary data items
              3 : List primary data items

                  Enter choice no.: PF1
```

Creating an index for DEPT

SUPRA DBA prompts you to enter a 2-character index name. Enter the index name NO and press RETURN to display the Index File Specification screen.

```
CINCOM SYSTEMS      SUPRA DBA  -  DATA SET INDEX CREATION    8-Jun-94  09:51












              Index name : NO



```

SUPRA DBA displays the Index File Specification screen and positions your cursor at the first field that you can modify.

Press RETURN three times to accept the first three default values and to move your cursor to the INDEX-FILE-SPEC field. Enter EDUC_DBA:DEPTIXNO.PER. Press RETURN to update the field. Press RETURN a second time to bypass the INDEX-SHADOW-FILE-SPEC field and display the "Enter field number to modify a field (or <PF1> to exit):" prompt. Press PF1 to exit this screen.

```
CINCOM SYSTEMS    INDEX-FILE-SP: DEPTIXNO    PERSON FILE-SPEC  8-Jun-94  09:52

    1 : INDEX-CORRUPT-ACTION          :OPERATOR
    2 : INDEX-NULL-SORTING            :HIGH
    3 : INDEX-READ-VERIFY             :YES
    4 : INDEX-FILE-SPEC               :EDUC_DBA:DEPTIXNO.PER
    5 : INDEX-SHADOW-FILE-SPEC        :

    Enter field number to modify a field (or <PF1> to exit) : PF1
```

The Comment screen follows the Index File Specification screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the "Secondary Key name:" prompt.

SUPRA DBA now prompts you to enter a 2-character secondary key name. Enter the key name NO and press RETURN to display the Secondary Key Attributes screen.

```
CINCOM SYSTEMS      SUPRA DBA  -  SECONDARY KEY PROCESSING    8-Jun-94  09:53




















      Secondary Key name : NO



```

SUPRA DBA displays the Secondary Key Attributes screen. Here you define the physical attributes of the secondary key. In this tutorial, you can accept the defaults set up by SUPRA DBA. Press PF1 to display the "Enter field number to modify a field (or <PF1> to exit):" prompt. Press PF1 to exit this screen.

```
CINCOM SYSTEMS            SECONDARY-KEY : DEPTSKNO        8-Jun-94  09:54

          1 : SECONDARY-KEY-NAME           :DEPTSKNO
          2 : SEC-KEY-UNIQUE               :NO
          3 : SEC-KEY-DIRECTION            :FORWARD
          4 : SEC-KEY-POINTER-ORDERING     :NO
          5 : SEC-KEY-POINTER-TYPE         :DIRECT
          6 : SEC-KEY-DATA-TYPE-SORTING    :NO
          7 : SEC-KEY-DUPLICATES           :5

          Enter field number to modify a field (or <PF1> to exit) : PF1
```

The Comment screen follows the Secondary Key Attributes screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the Data Items for Secondary Key screen.

SUPRA DBA displays the Data Items for Secondary Key screen. Because this is a new secondary key, no connected data items exist. Enter CTRL at the "Enter 4-character data item name:" prompt and enter C at the "Enter data item type:" prompt. Press RETURN to update the screen.

```
CINCOM SYSTEMS   SUPRA DBA  - DATA ITEMS FOR SECONDARY KEY   8-Jun-94  09:56

DATA ITEMS CONNECTED TO SECONDARY KEY NO

        *** No data items connected ***














        Enter 4-character data item name : CTRL
        Enter data item type (B,C,F,K,L,N,P,T,Z) : C
```

SUPRA DBA redisplays the screen. It indicates that you have included the data item DEPTCTRL in the secondary key NO and prompts you to include another data item. Press RETURN to finish including data items. SUPRA DBA displays the message "024 Secondary key created successfully." Press PF1 to exit this screen.

```
CINCOM SYSTEMS          DATA ITEMS FOR SECONDARY KEY          8-Jun-94  09:56

       Data items connected to Secondary Key (NO)

          1.   DEPTCTRL         C
                    *** End of list ***











          Add data item after data item DEPTCTRL
          Enter 4-character data item name:


024 Secondary key created successfully                         <PF1/2>

```

You have now defined a secondary key on the department number data item. This means you can write applications to return department records in department number order. You can also perform generic reads on this data item, omitting parts of the secondary key from the right.

SUPRA DBA prompts you to enter a 2-character secondary key name.
Do not enter a secondary key name; instead, press PF1 to display the
message "024 index created successfully." Press PF1 to exit this screen.

```
CINCOM SYSTEMS     SUPRA DBA  -  SECONDARY KEY PROCESSING   8-Jun-94  09:57




















            Secondary Key name : PF1


024 INDEX CREATED SUCCESSFULLY                               <PF1/2>

```

SUPRA DBA prompts you to enter another 2-character index name. Press PF1 to exit to the Data Set Function menu.

```
CINCOM SYSTEMS       SUPRA DBA - DATA SET INDEX CREATION      8-Jun-94  09:40












     INDEX NAME: PF1


```

Creating the related data set WHST

SUPRA DBA returns the Data Set Function menu. Enter 4 and press
RETURN to create a related data set. At the "Create related data set:"
prompt, enter WHST and press RETURN.

```
CINCOM SYSTEMS        SUPRA DBA - DATA SET FUNCTION         8-Jun-94  10:00

                 Function for data sets:
            1 : Examine data set
            2 : Modify data set
            3 : Create primary data set
            4 : Create related data set
            5 : Reserved
            6 : Delete data set
            7 : List all data sets
            8 : Connect an existing data set
            9 : Disconnect an existing data set
           10 : List databases using data set

              Enter choice no.: 4

      Create related data set:  WHST
```

Defining physical file attributes for WHST

SUPRA DBA returns the Physical File Attributes screen and positions your cursor at the first field that you can modify.

Press RETURN five times to accept the default values and to position your cursor at the FILE-SPEC-1 field. You do not need to update the TOTAL-LOGICAL-RECORDS field because SUPRA DBA calculates this value during database validation. For this sample database, you can accept the defaults supplied by DBA for LOGICAL-RECORDS-PER-BLOCK, ACCESS-MODE, CONTROL-INTERVAL and LOAD-LIMIT, although you may wish to change them when defining your own databases. For more information on these fields, refer to the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260.

Enter EDUC_DBA:WHST.PER and press RETURN to update the field. Press PF1 to display the "Enter field number to modify a field (or <PF1> to exit):" prompt and press PF1 or RETURN to exit this screen.

```
CINCOM SYSTEMS   FILE FOR DATA SET EMPL AND DATABASE PERSON  8-Jun-94  10:01

  1  :  TOTAL-LOGICAL-RECORDS        :0
  2  :  LOGICAL-RECORDS-PER-BLOCK    :10
  3  :  ACCESS-MODE                  :UPDATE
  4  :  CONTROL-INTERVAL             :100
  5  :  LOAD-LIMIT                   :80
  6  :  FILE-SPEC-1                  :EDUC_DBA:WHST.PER
  7  :  SHADOW-FILE-SPEC-1           :
  8  :  ALLOCATION-1                 :
  9  :  FILE-SPEC-2                  :
 10  :  SHADOW-FILE-SPEC-2           :
 11  :  ALLOCATION-2                 :
 12  :  FILE-SPEC-3                  :
 13  :  SHADOW-FILE-SPEC-3           :
 14  :  ALLOCATION-3                 :
 15  :  FILE-SPEC-4                  :
 16  :  SHADOW-FILE-SPEC-4           :
 17  :  ALLOCATION-4                 :

Enter field number to modify a field (or <PF1> to exit): PF1
```

The Comment screen is next. You will not enter any comments for the related data set WHST. Press PF1 or RETURN to exit this screen.

Creating a related buffer for WHST

SUPRA DBA returns the Buffer screen. The screen displays the
"BUFFER for this data set:" prompt. Enter RBUF and press RETURN.
SUPRA DBA then displays the "This buffer does not exist. Do you want
to create it (Y,N):" prompt. Enter Y and press RETURN to create the
buffer and display the Buffer Details screen.

```
CINCOM SYSTEMS                 BUFFER FOR DATA SET WHST        8-Jun-94  10:02

       BUFFER for this data set:   RBUF

       This buffer does not exist
       Do you want to create it (Y,N): Y
```

SUPRA DBA returns the Buffer Details screen. When you add a buffer,
the screen displays the default values. The only value you can change is
the number of copies; SUPRA DBA calculates the BUFFER-SIZE during
validation.

You do not need to change anything on this screen. Press RETURN to display the "Enter field number to modify a field (or <PF1> to exit):" prompt, and press PF1 or RETURN to exit this screen.

```
CINCOM SYSTEMS               BUFFER : PERSON WHST           8-Jun-94  10:03

  1 : BUFFER-NAME                    : RBUF
  2 : NUMBER-OF-COPIES-OF-BUFFER     : 5
  3 : PRIMARY-OR-RELATED-BUFFER      : RELATED
  4 : BUFFER-SIZE                    : 0


















Enter field number to modify a field (or <PF1> to exit): PF1

```

The Comment screen follows the Buffer Details screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen and display the Related Record Function menu.

Defining the record layout for WHST

At the Related Record Function menu, enter 2 and press RETURN to modify related data items.

```
CINCOM SYSTEMS        SUPRA DBA - RELATED RECORD FUNCTION   8-Jun-94   10:04

                   Function for data set WHST
             1 : Examine related data items
             2 : Modify related data items
             3 : List related data items
             4 : Examine coded data items
             5 : Modify coded data items
             6 : List coded data items
             7 : Add a new record code
             8 : Delete a record code
             9 : Examine record code comments
            10 : Modify record code comments

                Enter choice no.: 2
```

At the Data Item screen, SUPRA DBA displays the message "No data items defined for this record," and the "Select function (List,Modify,Add,Delete,Copy):" prompt. Enter A and press RETURN to add data items.

At the "Four-character data item name:" prompt, enter EMPL and press
RETURN. EMPL is the data item that will map onto the primary control key
in the data set EMPL via the linkpath. At the "Data item length (or press
<PF4> to add sub-data- items):" prompt, enter 6 and press RETURN.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:05


   No data items defined for this record









   Select function (List,Modify,Add,Delete,Copy): A

   Four-character data item name : EMPL
   Data item length (or hit <PF4> to add sub-data-items) : 6

```

SUPRA DBA redisplays the prompts at the bottom of the screen. Enter LKSV at the "Four-character data item name:" prompt, and press RETURN. After the "Name of primary data set to which linkpath refers:" prompt, enter EMPL and press RETURN. You are creating the linkpath between the primary data set EMPL and the related data set WHST.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:06


  No data items defined for this record

















  Select data item number or function (List,Modify,Add,Delete,Copy): A
  Add data item following data item WHSTEMPL
  Four-character data item name : LKSV
  Name of primary data set to which this linkpath refers : EMPL
```

SUPRA DBA redisplays the prompts at the bottom of the screen. At the "Name of the related key (<PF4>=EMPL):" prompt, you can enter the 4-character name of the data item in WHST, which maps onto the control key of the primary data set EMPL. By default, SUPRA DBA offers you the name of the data item you have just created (EMPL). Press PF4 to accept the default.

```
CINCOM SYSTEMS   SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:07


   No data items defined for this record













   Select data item number or function (List,Modify,Add,Delete,Copy): A
   Add data item following WHSTEMPL
   Four-character data item name : LKSV
   Name of the related key (<PF4>=EMPL): PF4
```

This creates the linkpath between the control key in the primary data set EMPL and the equivalent data item WHSTEMPL in the data set WHST. SUPRA DBA does not redisplay the entire screen as you enter each data item; it only redisplays the prompts at the bottom. Press RETURN to display the data items and the linkpaths you have just defined.

SUPRA DBA redisplays the screen, displays the data items you have just defined, and displays the "Select data item number or function (List, Modify, Add, Delete, Copy):" prompt. Enter A and press RETURN. Enter 2 in response to the "Add data item following data item number:" prompt and press RETURN.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:08


    2 data items at the outer level :

 1  WHSTEMPL=6
 2  EMPLLKSV=8=WHSTEMPL
    ** End of list **
```

```
  Select data item number or function (List,Modify,Add,Delete,Copy) : A
  Add data item following data item number: 2
```

SUPRA DBA redisplays the prompts at the bottom of the screen. Enter DEPT at the "Four-character data item name:" prompt and press RETURN. Enter 4 at the "Data item length (or hit <PF4> to add sub-data-items):" prompt and press RETURN.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:09


     2 data items at the outer level :

  1  WHSTEMPL=6
  2  EMPLLKSV=8=WHSTEMPL
     ** End of list **








     Select data item number or function (List,Modify,Add,Delete,Copy) : A
     Add data item following data item EMPLLKSV
     Four-character data item name : DEPT
     Data item length (or hit <PF4> to add sub-data-items) : 4
```

SUPRA DBA redisplays the prompts at the bottom of the screen. Enter LKSV at the "Four-character data item name:" prompt and press RETURN. At the "Name of primary data set to which linkpath refers:" prompt, enter DEPT and press RETURN. You are creating the linkpath between the primary data set DEPT and the related data set WHST.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:10


    2 data items at the outer level :

 1  WHSTEMPL=6
 2  EMPLLKSV=8=WHSTEMPL
    ** End of list **








  Select data item number or function (List,Modify,Add,Delete,Copy): A
  Add data item following data item WHSTDEPT
  Four-character data item name : LKSV
  Name of primary data set to which this linkpath refers : DEPT

```

SUPRA DBA redisplays the prompts at the bottom of the screen. The "Name of the related key (<PF4>=DEPT):" prompt asks you to enter the 4-character name of the data item in WHST, which maps onto the control key of the primary data set DEPT. By default, SUPRA DBA offers you the name of the data item you have just created (DEPT). Press PF4 to accept the default.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:11


    2 data items at the outer level :

 1   WHSTEMPL=6
 2   EMPLLKSV=8=WHSTEMPL
     ** End of list **













  Select data item number or function (List,Modify,Add,Delete,Copy): A
  Add data item following data item WHSTDEPT
  Four-character data item name : LKSV
  Name of the related key (<PF4>=DEPT): PF4
```

This creates the linkpath between the control key in the primary data set DEPT and the equivalent data item WHSTDEPT in the data set WHST. Because SUPRA DBA does not redisplay the entire screen as you enter each data item, press RETURN to display the data items and linkpaths you have just defined.

SUPRA DBA redisplays the screen and shows all the data items and linkpaths you have defined in the related data set WHST. Enter A and press RETURN to add a further data item; then type 4 in response to the "Add data item following data item number:" prompt and press RETURN.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:12


     4 data items at the outer level :

  1   WHSTEMPL=6
  2   EMPLLKSV=8=WHSTEMPL
  3   WHSTDEPT=4
  4   DEPTLKSV=8=WHSTDEPT
      ** End of list **










   Select data item number or function (List,Modify,Add,Delete,Copy) : A
   Add data item following data item number : 4

```

SUPRA DBA redisplays the prompts at the bottom of the screen. Enter DURA at the "Four-character data item name:" prompt and press RETURN. Enter 2 at the "Data item length (or hit <PF4> to add sub-data-items):" prompt and press RETURN.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:13


     4 data items at the outer level :

 1   WHSTEMPL=6
 2   EMPLLKSV=8=WHSTEMPL
 3   WHSTDEPT=4
 4   DEPTLKSV=8=WHSTDEPT
 ** End of list **







   Select data item number or function (List,Modify,Add,Delete,Copy): A
   Add data item following data item DEPTLKSV
   Four-character data item name : DURA
   Data item length (or hit <PF4> to add sub-data-items) : 2
```

SUPRA DBA redisplays the prompts at the bottom of the screen. Enter
TITL at the "Four-character data item name:" prompt and press RETURN.
Enter 15 at the "Data item length (or hit <PF4> to add sub-data-items) :"
prompt and press RETURN. Press RETURN again to redisplay the screen
to show all the data items and linkpaths.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:14


    4 data items at the outer level :

 1  WHSTEMPL=6
 2  EMPLLKSV=8=WHSTEMPL
 3  WHSTDEPT=4
 4  DEPTLKSV=8=WHSTDEPT
    ** End of list **






  Select data item number or function (List,Modify,Add,Delete,Copy): A
  Add data item following data item WHSTDURA
  Four-character data item name : TITL
  Data item length (or hit <PF4> to add sub-data-items) : 15
```

SUPRA DBA redisplays the data item screen. Press PF1 or RETURN to exit this screen and return to the Related Record Function menu.

```
CINCOM SYSTEMS  SUPRA DBA - DATA ITEMS IN WHST RELATED-DATA  8-Jun-94  10:15


    6 data items at the outer level :

 1   WHSTEMPL=6
 2   EMPLLKSV=8=WHSTEMPL
 3   WHSTDEPT=4
 4   DEPTLKSV=8=WHSTDEPT
 5   WHSTDURA=2
 6   WHSTTITL=15
     ** End of list **








  Select data item number or function (List,Modify,Add,Delete,Copy): PF1
```

SUPRA DBA displays the Related Record Function menu. Press PF1 or
RETURN to exit this screen.

```
CINCOM SYSTEMS     SUPRA DBA - RELATED RECORD FUNCTION    8-Jun-94    10:16


              Function for data set WHST
          1 : Examine related data items
          2 : Modify related data items
          3 : List related data items
          4 : Examine coded data items
          5 : Modify coded data items
          6 : List coded data items
          7 : Add a new record code
          8 : Delete a record code
          9 : Examine record code comments
         10 : Modify record code comments

              Enter choice no.: PF1
```

Bypassing index creation for WHST

SUPRA DBA prompts you to enter a 2-character index name. Press PF1 to exit without creating an index for this data set.

```
CINCOM SYSTEMS      SUPRA DBA  -  DATA SET INDEX CREATION     8-Jun-94  10:17

















          Index name : PF1


```

SUPRA DBA returns the Data Set Function menu. Press PF1 to exit to the Buffer Function menu.

```
CINCOM SYSTEMS          SUPRA DBA - DATA SET FUNCTION          8-Jun-94  10:18


                     Function for data sets:
               1 : Examine data set
               2 : Modify data set
               3 : Create primary data set
               4 : Create related data set
               5 : Create RMS data set
               6 : Delete data set
               7 : List all data sets
               8 : Connect an existing data set
               9 : Disconnect an existing data set
              10 : List databases using data set
              11 : Process database descriptions

                   Enter choice no.: PF1
```

SUPRA DBA displays the Buffer Function menu. You do not need to change the buffers you have defined, so press PF1 to exit this screen.

```
CINCOM SYSTEMS          SUPRA DBA - BUFFER FUNCTION         8-Jun-94  10:19


                        Function for buffers :
                   1 : Examine buffer
                   2 : Modify buffer
                   3 : Add primary buffer
                   4 : Add related buffer
                   5 : Delete buffer
                   6 : List data sets using buffer

                      Enter choice no.: PF1
```

Defining a task log

SUPRA DBA tells you there is no task log and displays the "Do you want to create one (Y,N):" prompt. Enter Y and press RETURN.

```
CINCOM SYSTEMS          SUPRA DBA - ACTION FOR TASKLOG         8-Jun-94  10:20




     There is no TASK-LOG Do you want to create one (Y/N): Y



```

SUPRA DBA returns the Task Log Details screen with the cursor positioned at the first field you can change. Press RETURN twice to accept the first two default values and to position the cursor at the TASK-LOG-FILE-SPEC field. Enter EDUC_DBA:TLOG.PER and press RETURN. Press PF1 to display the "Enter field number to modify a field (or <PF1> to exit):" prompt. Press PF1 or RETURN to exit this screen.

```
CINCOM SYSTEMS            TASK LOG : PERSON TASK-LOG        8-Jun-94  10:21

 1 : TASK-LOG-BLOCK-SIZE        : 1
 2 : TASK-LOG-NO-OF-BLOCKS      : 200
 3 : TASK-LOG-FILE-SPEC         : EDUC_DBA:TLOG.PER
 4 : TASK-LOG-SHADOW-FILE-SPEC  :

  Enter field number to modify a field (or <PF1> to exit): PF1
```

The Comment screen follows the Task Log Details screen. You do not need to enter any comments here. Press either RETURN or PF1 to exit this screen.

Defining a system log

SUPRA DBA tells you there is no system log and displays the "Do you want to create one (Y,N):" prompt. Enter Y and press RETURN.

```
CINCOM SYSTEMS        SUPRA DBA - SYSTEM-LOG FOR PERSON        8-Jun-94  10:22




   There is no SYSTEM-LOG Do you want to create one (Y/N): Y




```

SUPRA DBA returns the System Log Details screen with the cursor positioned at the first field you can change. Press RETURN twice to accept the first two default values and to position the cursor at the FILE-1-FILE-SPEC field. Enter EDUC_DBA:SLOG1.PER and press RETURN.

SUPRA DBA moves the cursor to the next field, FILE-2-FILE-SPEC. Enter EDUC_DBA:SLOG2.PER and press RETURN. Because system logging uses two log files, you must define two physical file specifications. Refer to the *SUPRA Server PDM Database Administration Guide (UNIX & VMS)*, P25-2260, for a full description of both task and system logging.

Press PF1 to display the "Enter field number to modify a field (or <PF1> to exit):" prompt. Press PF1 or RETURN to exit this screen.

```
CINCOM SYSTEMS          SYSTEM LOG : PERSON SYSTEM-LOG          8-Jun-94  10:23


1 : SYSTEM-LOG-BLOCK-SIZE         : 1
2 : SYSTEM-LOG-NO-OF-BLOCKS       : 500
3 : FILE-1-FILE-SPEC              : EDUC_DBA:SLOG1.PER
4 : FILE-2-FILE-SPEC              : EDUC_DBA:SLOG2.PER
5 : FILE-1-SHADOW-FILE-SPEC       :
6 : FILE-2-SHADOW-FILE-SPEC       :

Enter field number to modify a field (or <PF1> to exit): PF1
```

The Comment screen follows the System Log Details screen. You do not need to enter any comments here. Press PF1 or RETURN to display the message:

```
011 Database description created successfully        <PF1/2>
```

Press PF1 or RETURN again to display the Database Description Function menu. You have now created a database.

Before you can use this database, you must validate and compile it to create a database description file, then format the physical files to hold the data. "Validating and compiling a database" on page 105 describes the validate and compile functions; "Formatting database files" on page 113 describes the format functions.

3

Validating and compiling a database

Before you can use a new database, you must validate and compile it. This chapter takes you through the steps that are necessary to successfully validate and compile your database.

The process of building your sample database continues in this chapter where it left off in "Defining a system log" on page 102. You pressed PF1 or RETURN at the end of "Defining a system log" on page 102 to get to the Database Description Function menu, and from there we continue.

Validating a database

You can validate your database either online or in batch mode. Batch mode frees the terminal for other use. To start the Validate function, enter 8 and press RETURN. SUPRA DBA displays the "Validate database description name (<PF4> will select PERSON):" prompt. Enter PERSON and press RETURN. At the "Do you want to submit it to batch? (Y/N):" prompt, enter N and press RETURN.

```
CINCOM SYSTEMS    SUPRA DBA - DATABASE DESCRIPTION FUNCTION   8-Jun-94  11:01


               Function for database descriptions:
          1 : Examine
          2 : Modify
          3 : Create
          4 : Delete
          5 : Copy
          6 : List
          7 : Print
          8 : Validate
          9 : Compile and print
         10 : List logical views for the database
         11 : Data set functions

               Enter choice no.: 8

   Validate database description name (<PF4> will select PERSON)
    : PERSON




   Do you want to submit it to batch? (Y/N) : N
```

As SUPRA DBA validates your database online, it displays the Database Description Validation screen, dynamically updating the figures in the "Number processed" and "Errors found" columns as it processes the database entities. You will see messages appear on the screen. If SUPRA DBA encounters an error in your database, it tells you what the error is and prefixes the message with the flag:

```
>>>>>>ERROR
```

Each error is noted in the "Errors found" column. You cannot compile a database that has errors during validation. You must make a note of the entity identified in each error message (data sets, indices, file specifications, etc.) and press PF1 to allow validation to continue. Once validation is finished, go back into DBA to correct the errors and then revalidate the database.

If SUPRA DBA changes a value (a default or a value you have specified), it tells you what it has done and prefixes the message with the flag:

```
>>>>>>WARNING
```

Warnings do not prevent successful validation. Press PF1 or RETURN to clear each warning message and continue validation.

If you have followed the instructions in "Introduction," starting on page 13, and "Creating a database description," starting on page 17, validation should complete without errors. SUPRA DBA will, however, have to update many of the values.

The Database Description Validation screen with the first warning message displayed is shown below. Press PF1 or RETURN to continue validation. Press PF1 or RETURN for each subsequent warning message.

```
CINCOM SYSTEMS        DATABASE DESCRIPTION VALIDATION        8-Jun-94  11:02


                   Number processed          Errors found

Database description    1                          0
Data sets               3                          0
File spec sets          0                          0
Records                 3                          0
Data items              22                         0
Linkpaths               2                          0
Indices                 4                          0
Index file spec sets    4                          0
Secondary keys          4                          0
Buffers                 0                          0
Task log                0                          0
System log              0                          0

>>>>>> WARNING

Records per block has been rounded to 11 for EMPL


Hit <PF1> to continue or <PF2> for help
```

When SUPRA DBA has finished validating the database, it displays the message "PERSON validated successfully. Do you want to compile it (Y,N):". Enter Y and press RETURN.

```
CINCOM SYSTEMS        DATABASE DESCRIPTION VALIDATION        8-Jun-94  11:03


                      Number processed        Errors found

Database description   1                           0
Data sets              3                           0
File spec sets         3                           0
Records                3                           0
Data items            22                           0
Linkpaths              2                           0
Indices                4                           0
Index file spec sets   4                           0
Secondary keys         4                           0
Buffers                2                           0
Task log               1                           0
System log             1                           0



     PERSON validated successfully.  Do you want to compile it (Y,N) : Y



```

Compiling a database

SUPRA DBA displays the "Compile database description name:" prompt with the database PERSON set up as the default. Do the following:

1. Because this sample database is very small, enter N in response to the "Do you want to submit it to batch? (Y/N):" prompt and press RETURN. With larger databases, it is worthwhile submitting both the validate and the compile to batch to free up your terminal for other uses.

2. Enter Y at the "Do you want to print database description (Y/N):" prompt to produce a listing of the database you have created.

3. Press PF4 in response to the "Logical database description name (<PF4> will select PERSON):" prompt.

The next prompt is "File specification for compiled database (<PF4> will select /users/educ/supra/person.mod)". On your screen /users/educ/supra will be replaced with your default directory specification. Your default directory is the directory from which you invoked SUPRA DBA. Because you are creating all the database files in the directory with the logical name EDUC_DBA (see "Introduction" on page 13), enter EDUC_DBA:person.mod at this prompt.

SUPRA DBA pauses while it compiles your database; then displays the message "011 Database description compiled successfully <PF1/2>". Press PF1 or RETURN to exit to the Database Description Function menu.

This sequence of prompts is shown below.

```
CINCOM SYSTEMS           SUPRA DBA - DATABASE COMPILATION      8-Jun-94  11:04


    Compile database description name : PERSON

    Do you want to submit it to batch? (Y/N) : N

    Do you want to print database description (Y/N): Y

    Logical database description name (<PF4> will select PERSON)
    : PF4

    File specification for compiled database (<PF4> will select
    /users/educ/supra/person.mod) : EDUC_DBA:person.mod




    011 Database description compiled successfully <PF1/2>


```

SUPRA DBA redisplays the Database Description Function menu. Press
PF1 or RETURN to return to the Function Selection for the DBA menu.

```
CINCOM SYSTEMS    SUPRA DBA - DATABASE DESCRIPTION FUNCTION   8-Jun-94  11:05


                 Function for database descriptions:
           1 : Examine
           2 : Modify
           3 : Create
           4 : Delete
           5 : Copy
           6 : List
           7 : Print
           8 : Validate
           9 : Compile and print
          10 : List logical views for the database
          11 : Data set functions

              Enter choice no.: PF1




```

SUPRA DBA displays the DBA Function Selection menu.

```
CINCOM SYSTEMS    SUPRA DBA - FUNCTION SELECTION FOR THE DBA    8-Jun-94  11:06


                   Select required function :
             1 : Database descriptions
             2 : Data sets
             3 : Reserved
             4 : Reserved
             5 : Reserved
             6 : Reserved
             7 : Reserved
             8 : Users
             9 : Unlock functions
            10 : Administration functions

                Enter choice no.:
```

You have now created a database description file called person.mod in
the directory pointed to by the logical name EDUC_DBA. You have also
produced a listing file called person.lis in your default directory. The
person.mod file contains a description of your database. The PDM uses
this description to locate the data. The person.lis file contains a
description of your database that you can print out and use for reference.

The next step is to create and format the physical files that will hold your
data. "Formatting database files" on page 113 describes the format
function.

4

Formatting database files

After you compile your database, use the Format functions to allocate disk space for data sets, a task log, and system logs. You cannot use this database until its files have been created and formatted.

The SUPRA DBA format function formats the database to create data set files, index files, a task log, and system logs.

You access this format function from the Administration Functions menu. You finished "Compiling a database" on page 110 at the Function Selection for the DBA menu.

Using the Format function

To get to the Administration Functions menu, enter 10 and press RETURN.

```
CINCOM SYSTEMS   SUPRA DBA - FUNCTION SELECTION FOR THE DBA  8-Jun-94  11:01


                 Select required function :
          1 : Database descriptions
          2 : Data sets
          3 : Reserved
          4 : Reserved
          5 : Reserved
          6 : Reserved
          7 : Reserved
          8 : Users
          9 : Unlock functions
         10 : Administration functions


             Enter choice no.: 10
```

SUPRA DBA returns the Administrative Functions menu. Enter 1 and press RETURN to access the Format function.

```
CINCOM SYSTEMS     SUPRA DBA - ADMINISTRATION FUNCTIONS      8-Jun-94  11:02


                     Select required function :
                1 : Format
                2 : Utilities
                3 : Expand related data set
                4 : Reset data set load limit
                5 : Recovery
                6 : Reserved


                     Enter choice no.: 1
```

SUPRA DBA returns the Format screen with a copyright notice. At the "Name of database to be formatted:" prompt, enter PERSON and press RETURN. The copyright notice is replaced by the "Database password:" prompt. Enter CINCOM and press RETURN at this prompt. SUPRA DBA now displays the "Data sets =" prompt. Enter ALL. and press RETURN to format all data set and log files.

SUPRA DBA displays an information message as it creates and formats each file and index. It then pauses with the cursor at the "Data sets =" prompt for you to specify another data set. Press PF1 or RETURN to return to the "Name of database to be formatted:" prompt. Press PF1 or RETURN to exit.

```
CINCOM SYSTEMS    SUPRA DBA - FORMAT           VERSION 1.0    8-Jun-94  11:04


   Name of database to be formatted: PERSON

   Database password: CINCOM

   Data sets=ALL.
```

You have created the PERSON database, which is ready for you to use. You can now write applications to add and manipulate data.

Glossary of terms

activate index

A PDM operator command that enables the PDM to update index records each time the corresponding data file is updated. Use the check index function if the index has been deactivated for any length of time. See **deactivate index**, **check index**.

buffer

A temporary storage area in memory, used for data input or output.

check index

An indexing function you access through DBA, which uses the index maintenance utility CSTUIDX.EXE. Check index verifies that the index records match the records in the corresponding data file. Check will automatically correct any inconsistencies and is particularly useful for indices that have been deactivated for any length of time. See **activate index**, **deactivate index**.

command level

Level from which the user can enter input to the command interpreter. Also referred to as system level.

compiled database description

A file containing the physical definition of the database, file names, buffer names, and so on. It resides in global memory and is required for all database processing. SUPRA creates each compiled database description file with a default suffix of .mod. This file is sometimes referred to in error messages as the DBMOD. See **database description**.

data item

In design analysis, the smallest unit of data that has meaning to your organization. See **physical data item**.

Data Manipulation Language (DML)

A set of application statements that access a data manager. SUPRA for PDM supports physical view data manipulation language (PDML) for PDM.

data set

Description of the physical data storage in the SUPRA Directory including physical record(s) layout and file specification.

database

A collection of data stored on a computer storage medium so that it can be used for more than one purpose.

database description

A collection of physical record layouts, file specifications, linkpaths, data items and record codes, buffer information, task and system logging, and other environmental information stored on the SUPRA Directory. The database description describes the physical data and the relationships between the data to be maintained by SUPRA PDM and RDM. See **compiled database description**.

DBA

See **SUPRA DBA**.

DBA utilities

A SUPRA component that allows the Database Administrator to organize, display, and maintain data on Directory files and PDM files. Facilities allow you to change the structure of data sets without losing existing user-entered data and to produce statistics.

DBMOD

See **compiled database description**.

deactivate index

A PDM operator command used to terminate index updating. See **activate index**, **check index**.

dynamic indexing

A method for accessing data through the PDM with other than a control key or linkpath. It speeds data retrieval by using secondary keys stored on an index file, and it provides a method of obtaining data in a specified sequence. You can use the PDML READX command to make use of the secondary keys.

file

A set of data treated as a unit; generally used to refer to data stored on magnetic tapes or disks describing the physical characteristics of database files.

file path

The location of a file in a directory system. The file can be a database file or a compiled database description file. Logical names are sometimes used to point to the location of files.

file specification

A character string that uniquely identifies a file.

format function

A DBA or standalone function that creates and formats a database file. It sets all records within the file to binary zeros and writes a file control record in the file. (Task and system log files are not set to binary zeros.)

index file

A Directory file containing secondary key names, values, and pointers to the PDM primary or related files.

index format function

An indexing function you access from either DBA or the command level that uses the index maintenance utility CSTUIDX.EXE. CSTUIDX.EXE creates, formats, and activates your index files but does not populate them. See **populate index**.

key

A column or set of columns that uniquely identify a row.

linkpath

A physical field path the PDM follows from a primary record to access one or more records in a related file record chain. The primary record linkpath field points to the first and last related records in the chain. The related record linkpath field points to the previous and next record in the chain.

linkpath parameter

A PDM parameter that contains the name of the linkpath as defined on the Directory. It is used for related data set processing.

load limit

In a PDM related data set, the load limit specifies the percentage of a control interval within which new chains of related records may be started.

log file

See **System Log File** and **Task Log File**.

logical name

A name maintained in the logical name tables which is translated into an equivalence string. The name is defined to be used in place of a character string, and is often a file name.

logical name tables

Tables that the logical name system of SUPRA PDM maintains. Logical name tables contain logical names that are used by SUPRA for a variety of purposes. There are three standard logical name tables for UNIX:

♦ Process table

♦ Group table

♦ System table

MANTIS

A fourth-generation online- and batch-programming tool for system designers and application programmers. MANTIS can be used with SUPRA PDM or SUPRA SQL.

pathname

Sequence of directories that direct the UNIX file system to a specific file or group of files.

path specification

The location of a specific file.

PDM

See **Physical Data Manager**.

PDML

See **Physical Data Manipulation Language**.

physical data item

An entity containing information about the physical and logical characteristics of a database element. A physical data item is maintained in the Directory.

Physical Data Manager (PDM)

The SUPRA component that stores, retrieves, and maintains user database files. It includes logging and recovery facilities.

Physical Data Manipulation Language (PDML)

The data manipulation language you use in an application to request action by the PDM without using an RDM view. Programmers can issue OPEN, CLOSE, READ and WRITE commands that access and manipulate database files and records.

populate index

An indexing function accessed from the index maintenance utility CSTUIDX.EXE, from the PDM operator interface CSIOPCOM, and from the csireply command. Populate index reads records from a data file and writes corresponding index records to the index file. Populate always formats a new index file before writing records to it. See **activate index**.

primary data set

A data set that contains records of the same type and format and that can be accessed directly by a control key, independent of other information in the database. Primary data sets can exist independently, or they can be linked to related data sets. However, primary data sets cannot be related to other primary data sets directly.

primary file

A PDM file that contains unique keyed records. Records are accessed directly through a control key or a secondary key. Primary files can exist independently, or they can contain linkpaths to one or more related files. A primary file cannot be linked to another primary file.

primary key

For PDM support, an attribute or set of attributes that uniquely identifies each row in a relation. Primary keys are automatically maintained on the Directory through a relationship to the attribute entities involved. During conceptual-schema generation, the designated primary key generates the control key of a primary file and the referback key of a related file.

primary record

A record in a PDM primary file. A primary record contains a root field, control key field, data fields, and optional linkpath fields to related files. Primary records are stored and retrieved directly using the unique control key.

primary record linkpath

The anchor for chains of records in the related file. The primary linkpath is the one by which all related records in a particular data set should be inserted.

The PDM primary record field whose name connects the record to a related file and whose contents connect the record to a chain of the related file's records. The linkpath field contains two Relative Record Numbers (RRNs). The first RRN points to the first related record in the chain; the second RRN points to the last record in the chain. The primary file can have other linkpath fields to the same related file (a different chain) and to more than one related file.

referback

Links related files to a primary file through a linkpath. A field in a related file that through a linkpath is equal to the primary key of a primary file.

related data set

A data set containing related records that must be linked with a primary data set. Related data sets cannot be accessed directly; instead, they are accessed by linkpaths connected to primary records. A related data set cannot exist independently nor can it be related directly to another related data set.

related file

A PDM file that contains records that are not uniquely keyed and that might not be uniform in content or format. Related file records can be accessed through a linkpath or a secondary key or serially. A related file must be linked with a primary file; it can neither exist independently nor be linked with another related file. Related files contain either all coded records or all noncoded records.

related record linkpath

The PDM related record field whose name connects the record to a primary file and whose contents connect selected records in the related file to each other creating a chain. Each record having the same primary key value for the same primary file is a member of the chain. The linkpath field contains two Relative Record Numbers (RRNs). The first RRN points to the previous record in the chain; the second points to the next record in the chain. The related file can have other linkpath fields to the same or more than one primary file.

secondary key

Each index contains one or more secondary keys that are a physical field or its subdefinition or a combination of physical fields or their subdefinitions (from a single PDM primary or related file) to be used for dynamic indexing through PDML.

SUPRA

An advanced relational database management system. SUPRA provides tools for information retrieval, report generation, application programming, and database management and control.

SUPRA DBA

An online program that provides maintenance or update functions on the Directory, such as adding and changing entities.

system log file

A file to which completed PDM control functions and images of updated records are written, in case of failure. These functions and images can then be reapplied to a backup copy of the database to recover or restore the Directory and PDM files.

system logging

The PDM method of tracking database activity by logging any or all of the following to a log file on disk or tape: terminal I/O, after images, before images, PDML functions, file status changes, and so on.

task level recovery

A feature that ensures the integrity of PDM files modified by a failed task when task logging is specified. This recovers a task to the last commit point without interrupting the operation of the PDM. It also enables recovery of individual task transactions.

task log file

A sequential file on which the PDM writes the before images of database records and relevant information on a task-and-transaction basis. The file is used dynamically and on a warm start. This permits database recovery and the resetting of tasks to the beginning of each task's current transaction.

task logging

In the PDM, a method of logging all updates and relevant information on a task-and-transaction basis to the task log file. Using task logging, the PDM can recover and reset tasks (individually or in combination) to the beginning of each task's current transaction through task level recovery. Task logging records the activity of each task within each transaction. *See* **task level recovery**.

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